

Distressing Itch from a Moth, *Euproctis Flava* Bremer,
in the Orient.

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My first experience with this moth was a rather serious one. It was during my stay at Yokohama in July, 1923. While collecting insects that flew to my lamp on the veranda, I saw a fine yellow moth circle about. In order to secure it, I had to grab it in my hand, before I could get it into the cyanide bottle. Going to bed shortly afterward, I put in a miserable night. In the morning I found that I was broken out with a rash. This was distributed in three centers: on the back of my neck; on my back, just above the hips; and on the inside of my right forearm.

My natural conclusion was that something had been biting me in the bed, yet a thorough search disclosed nothing there. Later in the day I spoke of the matter to Dr. S. Kuwana, chief of the Imperial Plant Quarantine Service. He at once told me of an outbreak of a moth which was putting whole villages out of commission. From an examination of his specimens, I at once recognized my trouble. Undoubtedly while undressing, just after I had caught the pernicious moth, I had rubbed myself, distributing the poisonous hairs to the affected areas of my skin. The itching continued for days, and it was several weeks before it entirely disappeared.

I experienced a similar outbreak of these moths in central China, at Chinkiang, near the end of August, 1924. They flew abundantly to lights and crawled into every conceivable hiding place—into bed nets, behind clothing hanging in closets, and even into one's shoes. In this way their vicious hairs became rubbed off, and wherever they came in contact with the tender parts of the skin, set up violent irritation. The native people suffered tremendously from them at that time, since none of their houses are screened. Where the moths got among their bedclothing, whole families were laid up, and worse, the virulence of the scattered hairs continued for weeks, even after all the moths had

disappeared. Every person that slept in the bed became affected. It was found that the only way to get rid of this source of infection was to thoroughly wash everything—a difficult matter with heavy padded comforters, etc., so commonly used over there.

Briefly reviewing the literature, mostly Japanese, some of which I had translated for me, I found that this moth was a well-recognized pest among the common people of the countryside. In this connection Mills⁶ says:

"Reports of injuries by the malignant influence of flying insects are quite common in the Orient. In Korea a wide variety of skin lesions and ulcerative processes are popularly ascribed to insects whose exact nature no one seems to be able to describe. Sharp bodies from the wings rather than stings or bites are usually alleged to be the cause."

As to the source of the stinging hairs there appears to be a considerable difference of opinion among the Japanese writers; also in regard as to whether the injury is a mechanical or a chemical irritation.

Mayekawa,⁵ who did careful investigation on these moths from various parts of Japan, found that the body is covered with both scales and hairs. He says that mixed in with the regular scales, though the number is comparatively small, are very minute needle-like hairs. These have the tip divided into three, and the lower end near the axis sharply pointed. Their general structure is practically identical with those found on the caterpillars. Since the female covers the egg cluster with hairs from her body, the tiny poisonous hairs were commonly found in such situations. This author concludes that the irritation is mainly due to the mechanical action of the barbed hairs.

On the other hand, that the action is chemical is maintained by Sato and Koike,⁷ who believe it to be an acid, since alkalies partly, but not completely neutralize it. Furthermore, Mills⁶ states that the possibility of the presence of a toxin in the fresh hairs is suggested by:

- a. Constitutional symptoms in the more severe cases.
- b. Marked decrease in irritating properties in hairs after prolonged desiccation.

c. Presence of a patent canal throughout the length of the hairs.

d. Demonstration of dried material within the canals, which was not affected by solvents used.

Though the moth is undoubtedly the main distributor of the poisonous hairs, there is still some question as to whether they are produced by the moth or derived from the shed skin of the caterpillar in the cocoon. Gilmer¹ in his recent most comprehensive paper dealing with the poison apparatus of lepidopterous caterpillars has demonstrated that the poison is the product of a special gland cell. The gland is invariably unicellular no matter what the type of the penetrating organ. Speaking of the moths, however, he says: "In no case have poisonous properties been definitely identified as being inherent in the adult form. A number of species, all belonging to the genus *Euproctis* Hubner, or its near allies, have had the adult reported as urticating . . . ; in the case of *E. chrysorrhœa* the urtication is due to larval hairs spun into the cocoon, and removed therefrom by the anal tuft of the adult as it emerges through the cocoon walls. All evidence points to a like origin in other reported cases, since the hairs have the morphological characteristics of the larval hairs in every case."

AN ANNOTATED LIST OF THE PAPERS CONSULTED.

1. Gilmer, Paul M.: A comparative study of the poison apparatus of certain lepidopterous larvae. Ann. Ent. Soc. America, Vol. 18, No. 2, pp. 203-39, 21 figs., June, 1925.
2. Hashimoto, T., and Hagiwara, H.: The poisonous moth, *Euproctis flava* Bremer, and the dermatitis caused by it. Japan. Zeitschr. Dermat. and Urol., Vol. 22, No. 6, pp. 475-91, Tokyo, June, 1922. [Japanese text.] Abstract, Review of Applied Entomology, Ser. B., Vol. 11, p. 4. Records serious epidemics of acute dermatitis caused by the hairs of this moth.
3. Ito, T., and Matsusaki, H.: Ueber eine art von Dermatitis durch nachtschmetterling. Journ. Dermat. and Urol., Vol. 17, No. 4, pp. 60-61, April, 1917. [Japanese text.] Abstract in China Medical Journal, Vol. 31, No. 6, p. 521, November, 1917. This is apparently the first record in Oriental literature of dermatitis caused by the hairs of a moth. Yet, as Mills has pointed out in the above extract, there is a popular belief that many skin troubles thus originate.
4. Koike, S.: The caterpillar (probably *Euproctis flava* Bremer) caus-

ing urticarial dermatitis in Kwan San. *Gunidan Zasshi* (Journ. Military Surgeons, Japan), No. 76, April 30, 1918, pp. 206-10, 1 pl. Abstract in *China Medical Journal*, Shanghai, XXXV, No. 2, pp. 177-8, March, 1921; also, *Review of Applied Entomology*, Ser. B., Vol. 9, p. 118. Records outbreak among Japanese troops on maneuvers. [Japanese text.]

5. Mayekawa, S.: On "Dokuga" or *Euproctis flava* Bremer. *Insect World*, Vol. 20, No. 228, August, 1916. From a study of the variations of this widely spread moth the author concludes that *Euproctis (Aroa) subflava* Bremer, and *E. (Artoxa) intensa* Butler are synonyms of the above species. This paper gives a comprehensive survey of the pest, historical data, life history, character of injury, treatment, and control. [Japanese text.]

6. Mills, Ralph G.: Observations on a series of cases of dermatitis caused by a Liparid moth (*Euproctis flava* Bremer). *China Medical Journal*, Vol. 38, No. 5, pp. 351-71, May, 1923. Abstract in *Review of Applied Entomology*, Ser. B., Vol. 11, p. 151. This paper deals with the medical viewpoint. It gives a historical review and full bibliography. The reviewer uses the name *Nygma (Euproctis) flava* F.

7. Sato, K., and Koike, S.: Dermatitis caused by the moth *Euproctis flava*. *Journ. Dermat. and Urol.*, Vol. 17, No. 3, p. 59, March, 1918. [Japanese text.] Abstract, *China Medical Journal*, Vol. 35, No. 1, p. 74, January, 1921. "Poison in needle-shaped hairs, grouped at tip of tail."

8. Tanaka, Kenzo: Notes on life history and biology of *Euproctis flava* Bremer. MS.